

## Spherical Plots

The symbol in the lower right allows you to display mesh plots in spherical (instead of cartesian) coordinates. In this mode  $x \rightarrow \theta$ ,  $y \rightarrow \phi$ , and  $z \rightarrow r$ . Selecting this mode will cause  $x/y$  min/max to be reset so  $x$  is from 0 to  $\pi$  and  $y$  is from 0 to  $2\pi$ . You may change these values manually, but they may produce odd effects since this will represent more than 1 surface of rotation. Your data/formula MUST already be set up with the appropriate  $x/y$  coordinates. There is no way to remap your  $x/y$  data values within the program.

The plot will be scaled so the origin is in the center of the screen. The  $r$  value at the edge of the 3d display will be the larger of  $Z_{\max}$  or  $\text{abs}(Z_{\min})$ . Clipping is possible by manually setting  $Z_{\max}$  and  $Z_{\min}$ .

If you have Axes turned on in spherical mode they can be made to appear at one of 2 locations. If data set #1 is in spherical mode, the axes will be displayed at the origin ( $r=0$ ). If data set #1 is not in spherical mode (but one of the others is), the axes will be displayed at  $(x_{\min}, y_{\min}, z_{\min})$  as usual.

*Warning:* The labelling/tick features do not work correctly in this mode. They still try to display  $x/y/z$  values which may not be accurate. Also,

mixing spherical and cartesian modes may have unpredictable results.

In case you're curious, ALL of the surface mapping features will also function in spherical mode. Of course, contours represent r distance rather than z distance ....

If you want to play around, spherical harmonics are fun to play with:  $Y_{lm}(l,m,x,y)$ , where  $l < 4$  (all that is currently supported) and  $-l \leq m \leq l$ . For those who don't know, these plots represent the angular part of atomic orbitals.